

WHAT IS CLAIMED IS:

1. A fuel cell manufacturing apparatus, comprising:
 - a first gas flow path formation unit that forms on a first substrate a first gas flow path that supplies a first reaction gas;
 - a first current collecting layer formation unit that forms a first current collecting layer that collects electrons generated by a reaction of the first reaction gas supplied through the first gas flow path;
 - a first reaction layer formation unit that forms a first reaction layer where a reaction is performed based on the first reaction gas supplied through the first gas flow path;
 - an electrolyte film formation unit that forms an electrolyte film;
 - a second gas flow path formation unit that forms on a second substrate a second gas flow path that supplies a second reaction gas;
 - a second current collecting layer formation unit that forms a second current collecting layer that collects electrons generated by a reaction of the second reaction gas supplied through the second gas flow path; and
 - a second reaction layer formation unit that forms a second reaction layer where a reaction is performed based on the second reaction gas supplied through the second gas flow path,
 - at least one of the first gas flow path formation unit, the first current collecting layer formation unit, the first reaction layer formation unit, the electrolyte film formation unit, the second gas flow path formation unit, the second current collecting layer formation unit and the second reaction layer formation unit including a discharge device.
2. The fuel cell manufacturing apparatus, as set forth in claim 1:
 - the first gas flow path formation unit, the first current collecting layer formation unit, the first reaction layer formation unit, the electrolyte film formation unit, the second gas flow path formation unit, the second current collecting layer formation unit and the second reaction layer formation unit being continuously disposed as a manufacturing line.
3. The fuel cell manufacturing apparatus, as set forth in claim 1:
 - the respective units of the first gas flow path formation unit, the first current collecting layer formation unit, the first reaction layer formation unit, the electrolyte film formation unit, the second gas flow path formation unit, the second current collecting layer formation unit and the second reaction layer formation unit being coupled via a transfer unit.
4. A method of manufacturing a fuel cell in which method the fuel cell manufacturing apparatus, as set forth in claim 1, is used:

the step of forming the first gas flow path, the step of forming the first current collecting layer, the step of forming the first reaction layer, the step of forming the electrolyte film, the step of forming the second gas flow path, the step of forming the second current collecting layer and the step of forming the second reaction layer being continuously carried out.

5. A method of manufacturing a fuel cell, comprising:

forming a first gas flow path by which a first reaction gas is formed on a first substrate;

forming a first current collecting layer by which a first current collecting layer that collects electrons generated by a reaction of a first reaction gas supplied through the first gas flow path is formed;

forming a first reaction layer by which a first reaction layer where a reaction is carried out based on the first reaction gas supplied through the first gas flow path is formed;

forming an electrolyte film by which an electrolyte film is formed;

forming a second gas flow path by which a second reaction gas is formed on a second substrate;

forming a second current collecting layer by which a second current collecting layer that supplies electrons necessary for a reaction of the second reaction gas supplied through the second gas flow path is formed; and

forming a second reaction layer by which a second reaction layer where a reaction is carried out based on the second reaction gas supplied through the second gas flow path is formed;

at least in one step of the step of forming a first gas flow path, the step of forming the first current collecting layer, the step of forming the first reaction layer, the step of forming the electrolyte film, the step of forming the second gas flow path, the step of forming the second current collecting layer and the step of forming the second reaction layer, a discharge device is used.

6. The method of manufacturing a fuel cell, as set forth in claim 5:

in the step of forming a first current collecting layer, a first current collecting layer is formed on the first substrate;

in the step of forming the first reaction layer, a first reaction layer is formed on the first current collecting layer;

in the step of forming the electrolyte film, an electrolyte film is formed on the first reaction layer;

in the step of forming the second reaction layer, a second reaction layer is formed on the electrolyte film;

in the step of forming the second current collecting layer, a second current collecting layer is formed on the second reaction layer; and

the second substrate being disposed on the second current collecting layer.

7. The method of manufacturing a fuel cell, as set forth in claim 5:

the first current collecting layer, the first reaction layer and the electrolyte film are sequentially formed on the first substrate;

the second current collecting layer, the second reaction layer and the electrolyte film are sequentially formed on the second substrate; and

the electrolyte film of the first substrate and the electrolyte film of the second substrate are connected.

8. The method of manufacturing a fuel cell, as set forth in claim 5, further comprising:

disposing a first supporting member by which a first supporting member that supports the first current collecting layer is disposed in the first gas flow path that is formed in the step of forming a first gas flow path; and

disposing a second supporting member by which a second supporting member that supports the second current collecting layer is disposed in the second gas flow path that is formed in the step of forming a second gas flow path.

9. A method of manufacturing a fuel cell in which at least one current collecting layer, at least one gas diffusion layer, at least one reaction layer and an electrolyte film are formed between two substrates:

in a step of forming at least one layer of the current collecting layer, the gas diffusion layer, the reaction layer and the electrolyte layer, a discharge device is used.

10. The method of manufacturing a fuel cell, as set forth in claim 9:

the gas diffusion layer being formed on the current collecting layer;

the reaction layer being formed on the gas diffusion layer; and

the electrolyte layer being formed on the reaction layer.

11. A method of manufacturing a fuel cell in which between a pair of substrates, having a gas flow path formed thereon, at least one current collecting layer, at least one gas diffusion layer, at least one reaction layer and an electrolyte film are formed:

in a step of forming at least one of the supporting member that is disposed in the gas flow path, the current collecting layer, the gas diffusion layer, the reaction layer and the electrolyte layer, a discharge device is used.

12. The method of manufacturing a fuel cell, as set forth in claim 11:
the current collecting layer being formed on the supporting member;
the gas diffusion layer being formed on the current collecting layer;
the reaction layer being formed on the gas diffusion layer; and
the electrolyte film being formed on the reaction layer.
13. An electronics device comprising a fuel cell manufactured according to the manufacturing method set forth in claim 5 as a power source.
14. An automobile comprising a fuel cell manufactured according to the manufacturing method set forth in claim 5 as a power source.